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Immunisation

Acute hepatitis B (England): annual report for 2013

Introduction

Hepatitis B is a blood borne infection of the liver caused by the hepatitis B virus (HBV). The virus can provoke an acute illness characterised by nausea, malaise, abdominal pain, and jaundice but can also produce a chronic infection that is associated with an increased risk for chronic liver disease and hepatocellular carcinoma. Transmission is by parenteral exposure to infected blood and body fluids, most often through sexual contact, blood to-blood contact and perinatal transmission from mother to child. HBV infection can be prevented by vaccination and in the UK immunisation is used for individuals at high risk of exposure to the virus or complications of the disease e.g. people who inject drugs (PWID), healthcare workers. Immediate post-exposure vaccination is used to prevent infection, especially in babies born to infected mothers or following needle-stick injuries. [1]

Surveillance of acute hepatitis B is essential to target prevention and control activities such as the immunisation programme. Public Health England (formerly The Health Protection Agency (HPA) implemented national surveillance standards [2] for hepatitis B in 2007 which provided the framework for more consistent reporting of cases from PHE Centres. Available data on confirmed acute infections reported from laboratories can then be used to augment the epidemiological data collected from the local centres. The first report was published in 2008, and this report provides an update and presents acute hepatitis B surveillance data for 2013.

Methods

The surveillance definition for acute hepatitis B [2] is

> "HBsAg positive *and* anti-HBc IgM positive *and* abnormal liver function tests with a pattern consistent with acute viral hepatitis."

As information on liver function is usually not available to PHE, for the purpose of this analysis:

- those cases classified as acute hepatitis by the local PHE Centre or the laboratory and/or with a documented positive anti-HBc IgM were classified as acute infections;
- those classified as acute infections by the PHE Centre but without anti-HBc IgM results, or not classified but with a positive anti-HBc IgM were assumed to be probable acute cases;
- those classified as acute by the PHE Centre but with contradictory evidence e.g. positive hepatitis serology results dated before July 2012 were reclassified as chronic infections;
- cases classified as chronic infections or those not classified where anti-HBc IgM was negative or equivocal were assumed to be chronic infections;
- and those cases that remained unclassified and without anti-HBc IgM results were excluded from further analysis.

PHE Centre cases with a date entered from 1 January 2013 to 31 December 2013 were extracted from HP Zone and matched to a laboratory dataset using Microsoft Access and algorithms comparing combinations of the following variables: Surname, First name, soundex, date of birth, sex, clinic number and NHS number. The laboratory database contained all confirmed hepatitis B infections reported to PHE by laboratories in England and Wales (LabBase).The LabBase data was used to augment laboratory results and determine final status of any matching cases reported from the PHE Centre. A final reconciled dataset included cases classified as acute or probable acute and reported from the PHE Centre and/or from the laboratory to LabBase. After follow up with the clinician and/or the patient, PHE Centre staff assigned a probable route of exposure and collected information on other possible exposure routes. For the analysis, where the probable route of exposure had not been assigned, the most likely route was assigned hierarchically (injecting drug use, followed by homosexual exposure, then heterosexual exposure, etc).

Results

The PHE Centres reported 5711 hepatitis B cases from 1 January to 31 December 2013 to the PHE Immunisation, Hepatitis and Blood Safety Department. The matching and classification exercise resulted in 335 of these being confirmed as acute and 36 re-classified as probable acute cases with the remainder classified as chronic or excluded. Nineteen cases reported as acute from the PHE Centres were excluded or reclassified because they had no anti-HBc IgM result, were matched to a case classified as chronic in the laboratory database were duplicate episodes, or had been declassified (discarded) by the centre. A total of 9899 confirmed hepatitis B infections were reported from laboratories to LabBase in the same period, 358 (3.6%) of which were classified as acute cases, 48 (0.5%) as probable acute cases, 8479 (85.7%) were classified as chronic and 1014 (10.2%) remained unclassified. After the two databases were linked and reconciled, a total of 414 acute or probable acute cases of hepatitis B were reported for England in 2013. This gives an annual incidence of 0.77 per 100,000 population, lower than the incidence of 1.04 per 100,000 reported for 2012. London is still the region with the highest incidence (1.22 per 100,000) although this has almost halved from the previous year (2.02 per 100,000); the East Midlands now has the lowest incidence (0.35 per 100,000). In eight regions incidence was similar or declined from last year; in two slight increases were observed (table 1). The largest increase (0.26) since 2012 was observed in the North West. There continues to be regional variation in the contribution of the different sources to the overall total, although the overlap between sources has continued to improve suggesting that completeness of reporting by laboratories and local clinicians has also improved. As in previous years, the majority of cases were in men (72%) who had an overall incidence of 1.12 per 100,000 – a decrease from 1.45 per 100,000 in 2012 and continuing a decline from the previous year [3]. The corresponding incidence in women in 2013 was 0.42 per 100,000 -also a decrease from 0.64 per 100,000 in the previous year. Men aged 45-54 years had the highest incidence of acute hepatitis B at 1.82 per 100,000 but all age groups except males aged 15-24 had a lower incidence than in 2012 .The incidence in children remains very low (table 2).

Only 89 (21%) of the total acute or probable acute hepatitis B cases had their ethnicity recorded, a lower proportion than the previous year. Fifty nine percent of the cases were white, followed by Asian or Asian British (18%) and Black or Black British (12%), the latter lower than in 2012.

Of the total 414 acute and probable acute cases of hepatitis B, 249 (60%) had associated exposure information recorded (with the most probable route of acquisition assigned by the PHE Centre in 196 (47%)); the same proportion had exposure information available in 2012. As in previous years the commonest reported risk attributed was heterosexual exposure, implicated as the probable route of exposure in 141 (57%), similar to 56% in this category in 2012 (n=191). Cases attributed to sex between men were reported in 40 (16%); a similar proportion to the 58 (17%) reported in 2012. Eleven cases (4.4%) with known exposure were attributed to PWID – an increase from 1.5% in the previous year. A further two cases reported injecting drug use during their lifetime but had been assigned to either heterosexual or homosexual exposure as the most likely risk by the PHE centre. In all, 18 (7%) cases had health care related exposures including, surgery, dental treatment, blood transfusion, and dialysis (of which 5 cases were reported to have been exposed abroad) – a decrease from the 33 cases assigned to medical risk factors last year.

Skin piercing, tattooing and acupuncture combined were listed as probable exposures for seventeen cases (6.8%) and a range of other risks were reported for the remaining 22 cases.

Discussion

In 2013, reporting of acute cases of hepatitis B from PHE Centres has continued to exceed the number reported from laboratories but the proportion of cases reported by both PHE Centres and laboratory systems is high at 71% (294/414). This increase in overlap may be due to improved matching because of better quality identifiers or it may reflect more complete reporting from both sources. The latter explanation is plausible given the introduction of statutory laboratory reporting in October 2010 and the continued decline in the proportion of cases of unknown status reported from laboratories. Combining data from both sources does minimise under ascertainment and improve the completeness of associated data for analysis. Interpretation of trends should be made with caution, but based on this combined data, the incidence of acute symptomatic hepatitis B is low and decreasing. Given the improved quality and completeness of data provided in 2013, it is likely that there has been a continued gradual decline in incidence since 2008 which has become more apparent in the last year.

It is known that anti-HBc IgM, normally a marker of acute infection, may be detected during flares in chronic infections. To minimise misclassification, matching to historical laboratory reports can identify those chronic infections detected previously. However, there is still likely to be some misclassification of chronic cases as acute infections in both datasets. Given the large number of chronic cases diagnosed each year, even a small proportion of cases misclassified as acute can substantially increase the estimated incidence of acute hepatitis B, and confuse the attribution of exposures. Further testing using anti-HBc avidity is now being offered at PHE Colindale, to enable better distinction between acute and chronic infection. Local laboratories can send samples from IgM positive cases to the national reference laboratory where both genotyping and avidity testing will be undertaken [5].

Risk factor data were available in 60% of cases. The interpretation of these data is difficult because in many instances, more than one possible exposure is listed and a probable exposure had not been assigned by the local unit. Despite this, the data suggest that the number of cases in PWID has remained low in 2013, although higher than the number reported in 2012. The overall low incidence in this group is supported by the 2012 unlinked anonymous survey among PWID in contact with drug services which showed that anti-HBc prevalence has remained low and self-reported uptake of hepatitis B vaccine has remained high since 2009, particularly in recent initiates [6].

The incidence of acute hepatitis B continues to remain higher in males than females. This excess of male cases is partly explained by cases in men who have sex with men (MSM); the number of cases with this exposure reported has remained high again this year, following a large increase in 2010. Such cases are more likely to be diagnosed in GUM clinics, reinforcing the important role of GUM clinics in providing opportunistic hepatitis B immunisation to MSM and individuals with multiple sexual partners. In 2010 the HPA worked with the British Association of Sexual Health and HIV (BASHH) to introduce a standard form for GUM clinics to report acute hepatitis to their local health protection team [7]. This may have helped to increase the reporting of cases diagnosed in this group. This year, a lower proportion of cases were attributed to medical exposure. It is still likely that many of these attributions are incorrect, as further investigation may have been undertaken – for example by NHS Blood and Transplant and excluded transmission by this route. It is therefore recommended that cases with these exposures assigned are checked prior to reporting.

References

1. Immunisation against infectious disease, London, Department of Health, 2006. https://www.gov.uk/government/publications/hepatitis-b-the-green-book-chapter-18

2. Standards for local surveillance and follow up of hepatitis B and C, London. Health Protection Agency, 2006. https://www.gov.uk/government/publications/hepatitis-b-and-c-local-surveillance-standards

3. Acute hepatitis B (England): annual report for 2012 http://www.hpa.org.uk/hpr/archives/2013/hpr3513_acthpb12.pdf

4. Mid-2013 population estimates for England, Office of National Statistics, 2013.

5. Enhanced surveillance of acute hepatitis B virus infection sample referral form:

http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/HepatitisB/Forms/

6. Shooting Up: Infections among people who inject drugs in the UK 2012. An update: November 2013 http://www.hpa.org.uk/Publications/InfectiousDiseases/BloodBorneInfections/ShootingUp/1311ShootingupInfectionsamongIDUS/

7. Forms for reporting cases of acute hepatitis A, acute hepatitis B and acute hepatitis C diagnosed in Genitourinary Medicine Clinics (GUM) to local health protection teams (HPTs). https://www.gov.uk/government/publications/hepatitis-form-for-reporting-cases-from-gum-to-hpts

Table 1. Acute or probable acute hepatitis B cases by region and source of report, 2013 (incidence 2008-2013 – mid 2013 population ONS [4]**)**

REGION	HPU	Laboratory	BOTH	TOTAL	**Incidence of reported acute hepatitis B per 100,000 in 2013**	Incidence of reported acute hepatitis B per 100,000 in 2012	Incidence of reported acute hepatitis B per 100,000 in 2011	Incidence of reported acute hepatitis B per 100,000 in 2010	Incidence of reported acute hepatitis B per 100,000 in 2009	Incidence of reported acute hepatitis B per 100,000 in 2008
EAST MIDLANDS	5		11	16	**0.35**	0.77	0.76	0.74	0.85	1.3
EAST OF ENGLAND	9		39	48	**0.81**	0.89	1.08	0.78	0.85	0.97
LONDON	35	9	59	103	**1.22**	2.02	2.06	1.82	1.8	1.83
NORTH EAST	1		16	17	**0.65**	0.46	0.54	0.54	1.28	0.7
NORTH WEST	6	15	41	62	**0.87**	0.61	0.99	0.96	1.64	1.79
SOUTH EAST	7	13	39	59	**0.67**	0.84	0.96	0.84	1.03	1
SOUTH WEST	5	2	27	34	**0.63**	1.40	1.16	1.05	0.78	0.85
WEST MIDLANDS	4	4	23	31	**0.55**	0.98	0.90	0.66	0.74	0.76
YORKS and HUMBER	5		39	44	**0.82**	0.83	1.06	0.97	1.05	1.18
National	**77**	**43**	**294**	**414**	**0.77**	**1.04**	**1.13**	**0.99**	**1.15**	**1.21**

Table 2. Age and sex breakdown of acute or probable acute hepatitis B reports, 2013 (mid-2013 population ONS) [4]**.**

	Female		Male		NK		TOTAL	
Age group	Number of cases	Incidence of reported acute hepatitis B per 100,000 population	Number of cases	**Incidence of reported acute hepatitis B per 100,000 population**	Number of cases	Incidence of reported acute hepatitis B per 100,000 population	Number of cases	Incidence of reported acute hepatitis B per 100,000 population
<15	2	0.04	6	0.12		-	8	0.08
15-24	39	1.16	39	1.11	1	-	79	1.15
25-34	30	0.81	66	1.80		-	96	1.30
35-44	21	0.58	62	1.74		-	83	1.16
45-54	13	0.34	68	1.82	1	-	82	1.09
55-64	3	0.10	36	1.21		-	39	0.64
GE65	6	0.12	20	0.48		-	26	0.28
NK	-	-	1	-		-	1	-
Total	**114**	0.42	**298**	**1.12**	**2**	**-**	**414**	**0.77**